IV.

SHORT ACCOUNT OF THE CASES

TREATED IN THE

CHOLERA HOSPITAL, SURGEON SQUARE,

DURING THE LATE EPIDEMIC.

(*Read to the Medico-Chirurgical Society of Edinburgh, January 3rd*, 1855.)

In 1848 Edinburgh acquired the by no means enviable distinction of being "the first part of the United Kingdom attacked by cholera."[1] In 1853, the disease, after an absence of little more than three years, made its re-appearance at Newcastle-on-Tyne on the 30th day of August, and before the close of the following month cholera had again broken out in this city. But, though for the third time very early in the list of places in the United Kingdom in which cholera appeared, we have nevertheless to congratulate ourselves, that the duration of the epidemic in Edinburgh, on the last occasion, has not been lengthened, nor its effects very fatal. The hospital in Surgeon Square, which, as the members of the Society are aware, was, during the epidemic of 1848-49, set apart for the reception of cholera patients, in September, 1853, was again opened for the same purpose, and at the request of the Sanitary Committee of the City Parochial Board, I undertook the duties of its visiting physician. From the circumstance of my having occupied that position, I have felt it incumbent upon me to offer

[1] Dr. Sutherland's report to the Board of Health, page 123.

to the Society a short account of the cases treated in the hospital. To this subject the following remarks will be confined, as I am neither desirous nor able to give an account of the epidemic as it prevailed throughout the city generally. During the late epidemic the hospital in Surgeon Square was originally opened on the 16th of September, 1853; it was temporarily closed about the commencement of June, 1854, to be again opened on the 24th of August. It was finally closed a little more than a fortnight ago; the last admission being on the 30th of November, and the last dismissal on the 11th of December ultimo. During the whole period there were admitted, in all, 243 patients, of which number only 45 were brought to the hospital during the earlier period, viz. from September, 1853, to May, 1854, and 198 during the period which intervened between the end of August and the commencement of December, 1854. The idea that the whole of the cases which occurred were somewhat equally distributed over these two distinct periods must not, however, be entertained, the Sanitary Committee having very wisely on both occasions kept the hospital open and retained the services of a medical staff, for what appeared a safe period, during which, probably for weeks, there were not admitted more than one or two cases at most. The proper impression will be conveyed, when I mention, that during the first period, as many patients were admitted during October and November as during all the other months, and that from October 3rd to 30th inclusive, 15 out of the whole 45 were admitted. Again, during the latter period, of the 198, no less than 168 were admitted during September and October, and in September alone 97. From the 22nd to the 26th of September the average of the cases under treatment in the hospital daily exceeded 25; on the 23rd of September there were 28 cases in hospital. Placing the numbers occurring during the two periods together, we find that the experience of the hospital has been roughly as follows:—Total number admitted, 243—of these, *males*, 97; *females*, 145; *total recoveries*, 126; *total deaths*, 117. *Deaths among males*, 43; *deaths among females*, 74; *recoveries among males*, 54; *recoveries among females*, 72. The total recoveries thus exceed the total deaths by 9, while the mortality among female patients exceeds by 2 the recoveries; and among the male patients falls short of the recoveries by 11.

Among these cases, however, it must be remembered, that not a few are included which were not cases of genuine cholera; thus, the number of recoveries will shortly be found to suffer a fall, and we shall also have to diminish the fatal catalogue by reason of a few deaths having occurred from other diseases than cholera, for during an epidemic it is by no means uncommon for patients labouring under severe disease in many different forms to be found occupying beds in a cholera hospital. Accordingly, we shall have to notice two fatal cases of peritonitis, and more than one death from other causes, dysentery, &c. In several instances the age, owing sometimes to the condition of the patient, was not ascertained. The following table gives in decennial periods the ages of the cholera patients which were correctly noted:

	Males.	Females.	Total.
Under 10 years	4	4	8
From 10 to 20 years ...	13	9	22
„ 20 to 30 „ ...	21	30	51
„ 30 to 40 „ ...	20	24	44
„ 40 to 50 „ ...	20	27	47
„ 50 to 60 „ ...	8	16	24
„ 60 to 70 „ ...	7	11	18
Above 70 „ ...	1	3	4
	94	124	218[1]

As regards the *habits* of the patients before admission, it was ascertained that of the little more than 200 adults, 95 were notoriously intemperate, and, with the exception of 51 who were reputed sober, there was reason to believe that the habits of the remainder were more or less irregular. Forty-seven adults were removed to the hospital from houses dirty and overcrowded; not a few of these had, in addition, darkness and dampness to afflict them. Many were in an enfeebled state of body, in privation, wanting the necessaries of life, alike as regards food and clothing. Several found in open stairs were

[1] A glance at this table will show the uniformity, as regards age, which exists in the seizure of males and females. Of the 124 females, 81 were between the ages of twenty and fifty; and of the 94 males, 61 were within the same periods of life. Adult age seems the one at which attacks of cholera are most frequent; for, keeping all the circumstances in view necessary in such an inquiry, it does appear that neither in youth nor in advanced age is the disease so common.

brought to the hospital by the police; one woman had for many years slept, save at intervals when a tenant of the gaol—without shelter of any kind—she recovered. Of 53, however, it was affirmed that the houses from which they were brought were clean, and of other 20 that their houses were *tolerably* clean and comfortable.

The following are the streets and parts of the city, new and old, from which patients affected with genuine cholera were brought to the hospital, the asterisk indicating the localities from which several cases were brought:

*Canongate.
*High Street.
*Lawnmarket.
*Grassmarket.
*West Port.
Trunk's Close.
Fleshmarket Close.
Chalmers' Close.
Bailie Fyfe's Close.
St. Leonard Street.
Hastie's Close.
*Candlemaker Row.
Baxter's Close.
*Hume's Close.
Blackfriars' Wynd.
Pleasance.
Drummond Street.
Castle Hill.
St. Mary's Wynd.
Big Jack's Close.
James' Court.
Alison Square.
Advocate's Close.
Anchor Close.
*Leith Wynd.
Hyndeford's Close.
Fountain Close.
Monteith's Close.
Stevenlaw's Close.
*Crosscauseway.
Greenside.
*Hope's Land.
Potterrow.
Craig's Close.
Cholera Hospital, Surgeon Square.
Burnett's Close.
Horse Wynd.
Fishmarket Close.
Maconochie's Close.
Carlton Street.
Duncan Street.
William Street.
India Street.
Rose Street.
Little King Street.
*Canonmills.
Thistle Street.
Jamaica Street.
Water of Leith.
Poplar Lane, Leith.
Canal Court, Leith.
*Holyrood.[1]

One case was brought from the prison and one from the Magdalene Asylum. The former was a remarkable case in more than one particular. He was the only prisoner who on this occasion suffered from the disease—had been confined for twenty days before he was attacked, and had he survived one other day, his period of imprisonment would have terminated. The elements are certainly wanting in this case to constitute

[1] The influence of locality in relation to cholera, and of elevation (a point which has been most ably handled by Mr. Farr), I did not possess the means to investigate, but these are subjects of great interest, and well deserving attention; it is to be hoped that in Edinburgh they will not be lost sight of; indeed, it were well that those who are charged with the supervision of districts, should keep them in view, as bearing on the origin and progress of all epidemic diseases.

any very probable theory of its having originated by contagion. It was, further, a very rapid case—from seizure till death only thirteen hours intervened. On looking over the table of localities from which patients were removed to the Surgeon Square Hospital during the epidemic of 1848-49, as given by Dr. William Robertson in his very interesting paper, I have been much struck by their very nearly exact sameness with those I have just read. In some particulars, indeed, the correspondence is most remarkable, the same localities in Leith are noted, and the parts of the High Street, Canongate, Cowgate, Lawnmarket, and West Port of Edinburgh are almost identical. Only one case of genuine cholera originated in the hospital during the epidemic. It occurred during the first period, and was that of an elderly female of very intemperate habits and broken-down constitution. She was connected with the laundry, and had no occasion to enter the wards, nor, so far as I am aware, had she ever done so; but she washed during several successive days the clothes of patients who were ill, or had died of the disease; a means, very potent, I have been led to believe, in the communication of the disease, and one which it becomes medical men to be very careful in advising regarding. During this period diarrhœa was common among both medical men and attendants. During the latter period, when, too, there were many more patients in the hospital, there originated no case of genuine cholera, and diarrhœa was not frequent among doctors or nurses. Dr. Robertson's experience in 1848-49, contrasts with this—five nurses contracted the disease, and three of the five died.

Of the 243 cases, the following were *certainly* not cholera, and these I enumerate in order to indicate the cases which are sometimes admitted to a cholera hospital:

1. A female, aged 20, tubercular peritonitis. Died.
2. A man, aged 30, acute peritonitis. Died.
3. A woman, aged 70, severe gastralgia. Relieved.
4. Cases of intoxication brought by the police during the night, having either vomiting or diarrhœa, and not unfrequently cramps. Recovered.
5. 〃
6. 〃
7. 〃
8. 〃
9. 〃
10. 〃
11. 〃

12.	A male child,	aged 2, hydrocephalus.	Died.
13.	A woman,	aged 20, delirium tremens.	Removed to Infirmary.
14.	A man,	aged 40, epilepsy.	Dismissed.
15.	A female,	aged 25, hysteria.	Dismissed.
16.	A female,	aged 50, dysentery.	Recovered.
17.	A man,	aged 60, dysentery.	Died.

The 243 cases are thus diminished by seventeen, and the 226 are further to be reduced by those cases which were *evidently* more or less severe bilious diarrhœa; this done, there will still remain a few *doubtful cases* among the genuine cases of cholera; these, however, it is impossible from obvious reasons to separate, and all we can decidedly affirm of them is, that to the best of our knowledge, though they did not pass into the second stage of the disease, collapse at one time appeared more or less imminent. Of cases of diarrhœa which were easily cured, and never presented any threatening symptom of cholera, there were 18, and this further reduction leaves 208 cases of genuine cholera. Of 68 cases of genuine cholera, in which the condition of the patient on admission was accurately noted, 42 were in a state of either *profound* or *decided* collapse, or in a state *approaching* to collapse, and 26 were affected either with the characteristic discharges from the bowels and stomach, or, these having been arrested, with some other combination of symptoms distinctive of the disease. Of the 42, 28 were females and 14 males. Of the 26, 12 were females and 14 males. Of the 42 admitted in collapse, 36 died and only 6 recovered. Of the 26 who had not passed into collapse, 4 died and 22 recovered. The former experience does not appear to me to militate against the success of hospital treatment, so much as against the removal of patients to hospital in whom the disease has advanced to the stage of distinct collapse. The latter statement appears to favour the propriety of removal in the case of patients whose symptoms, though unequivocal, have not advanced to the stage of collapse.

A few other facts of interest may be noticed here. Of 35 fatal cases whose period of first seizure appeared to have been accurately noted, in 25 it occurred during the night between 9.30 p.m. and 5.30 a.m. In 10 during the day. In 14 of the 35, admission to the hospital took place during the night, and in 21 during the day. In these 35 fatal cases,

the period which elapsed between admission and death was as follows:

In	1	4	hours.
In	1	5½	hours.
In	3	12	hours.
In	2	13	hours.
In	3	14	hours.
In	1	15	hours.
In	2	18	hours.
In	1	21	hours.
In	11	1	day.
In	1	27	hours.
In	3	2	days.
In	1	3	days.
In	1	4	days.
In	2	5	days.
In	1	7	days.
In	1	8	days.
	35		

Thus, fourteen survived less than twenty-four hours, and only ten a longer period than one day.

In connection with some of these cases, there are a few points of particular interest. It has been stated that "pregnancy is a predisposing condition to a fatal attack of the epidemic." Whether pregnancy does or does not predispose to cholera, I do not feel prepared to answer; but it is abundantly evident, that the risk of the disease proving fatal is increased by the co-existence of that condition. Of patients in this state brought into the hospital, the following facts were noted:

1. A female, æt. 30, seven months pregnant; died in consecutive fever after being nearly four days in hospital; did not miscarry.

2. A female, æt. 26, six months pregnant; died in consecutive fever on the fourth day in hospital; miscarried two days before death.

3. A female, æt. 30, five months pregnant; died in consecutive fever on the third day in hospital; miscarried day before death.

It is to be remarked that all three passed from collapse into the stage of fever, that in that state two of the three miscarried, and that all died.

Two nursing mothers were admitted; one recovered, the other died. The facts observed in the hospital appeared to confirm the opinion that the weak and the cachectic are not peculiarly liable to cholera. None of the persons labouring under other forms of disease who were admitted contracted cholera, and, with few exceptions, the cholera patients themselves appeared to be free from lesions of importance. Neither did the existence of previous extensive disease seem, as might be at first imagined, to cause a fatal complication; at least, two patients, both females, suffering from advanced phthisis, struggled through very severe attacks of cholera.

One of the points, to the elucidation of which my endeavours were always directed in the hospital, was, whether or not cases of cholera are preceded by a premonitory diarrhœa. Certainly, in most of the cases, this question received an affirmative confirmation; still there were not wanting cases in which the most careful inquiry failed to elicit any evidence of such affection. In regard to the statements either of the patients themselves, or of the friends who accompanied them to the hospital, it must be borne in mind that an habitual state of looseness of the bowels is by no means uncommon among the lower orders—a circumstance which may explain the little attention being given in the first instance to a slight or even decided increase of it. Of fifty-three cases in which I imagined that a pretty near arrival at truth was made, there were twenty-one in which there existed no evidence of premonitory symptoms, and thirty-two in which there was certain evidence of their occurrence.

Of these thirty-two—

Six had diarrhœa for some hours.
Six ,, ,, one day.
Three ,, ,, two days.
Four ,, ,, three days.
Two ,, ,, four days.
Two ,, ,, five days.
Two ,, ,, six days.
One ,, ,, seven days.
Three ,, ,, eight days.
One ,, ,, a few days.
One had sickness for two days.
One had vomiting and cramps for four days.

Other cases there were, in which careful examination failed

to elicit any evidence of the occurrence of premonitory symptoms. One of the most remarkable of these was that of the lad from the gaol, previously alluded to. At 11 p.m. he was seized with a feeling of sinking, having up to that time been quite well: had only one stool, and shortly afterwards passed into collapse, in which state he died within thirteen hours from his first seizure.[1] For days previously his bowels had been regular, and during the whole course of his fatal illness he had only one stool. There were not wanting other cases in which the *small* number and quantity of the discharges from the bowels bore a marked contrast to the sunken condition of the patient; in all such, however, it was easily ascertained that the matters lodged to a very considerable amount in the intestines. In not a few, in whom diarrhœa had not occurred for several hours, a copious discharge took place shortly after death.

Bloody stools were observed in several cases; in almost all these the patients were old. This symptom was invariably a very alarming one, and no patient recovered on the last occasion who had suffered from it. In regard to the occurrence of *consecutive fever*—in almost all the cases of recovery from severe collapse, the patients became affected with febrile symptoms; in but few cases, however (compared to what occurred in the previous epidemic, and with the accounts I have read of the experience of other practitioners), did these symptoms run so high as to deserve the name of consecutive fever; or did the condition of the patient become again imperilled. Of thirteen cases in which a severe form of consecutive fever did supervene, eight died and five recovered. Of these seven were males and six females. Of the eight deaths four were in complete coma, three of the four with complete suppression of urine. One from whose bladder urine in considerable amount had been drawn off for three days before death; and notwithstanding the tendency to coma, had continued to increase. Three patients died after recovery from collapse, more from acute pulmonary affection—in two bronchitis, in one pneumonia—than from cholera. Twenty-seven deaths, nineteen of females and eight of males, took place in profound collapse; two others, a man and a woman, both in collapse, perished suddenly. Both had

[1] For this fact I am dependent not merely on the testimony of the patient, but on that of the medical officer of the prison, Dr. Simson.

become violently delirious, and had been with great difficulty retained in bed: in a moment the delirium appeared to cease; both became quite sensible, but both were perfectly blind, and continued so till death, which did not occur in either for some hours.

The appearances of the body after death, and, in particular, the occurrence of the peculiar movements, "due to the coincidence of contraction in different muscles," were just such as have been frequently observed and recorded. I have no particular observations to offer on the morbid appearances found on dissection of the fatal cases. During the first period, the bodies of nearly all the cases proving fatal were examined; the appearances found confirmed the now generally received opinions in regard to the condition of the alimentary canal, namely, the prominence of the intestinal glands, both aggregate and solitary, especially the latter, in the lower part of the ileum, the distension of the gall-bladder with bile, the absence of urine from the bladder, the dry state of most of the serous membranes, and existence of ecchymotic spots on some of these. I must here record my grateful sense of the kindness of my accomplished friend, Dr. Haldane, pathologist to the Royal Infirmary, under whose immediate superintendence nearly all the dissections were conducted. During the latter and longer period of the hospital being open, we were unable to avail ourselves, on account of certain sufficiently good reasons, of the privilege we enjoyed in the former time, in having the use of the *post-mortem* theatre of the Royal Infirmary. The dissections were therefore performed in the Cholera Hospital itself, being, however, limited, by the wish of the Sanitary Committee, to those cases in which permission was given by the friends.

The remaining observations I have to make concern treatment. When the desperate condition of many of our patients on admission is held in remembrance, it will be seen that, in a considerable proportion of cases, our efforts were necessarily confined to relieving the sufferings of the victims; in very few with but little hope of anything further—in most with no such hope at all.[1] Even in the most desperate cases, however, their

[1] Of not a few of such, it may be affirmed, that had they been visited at home on the first occurrence of symptoms, the result would have been

reception into a warm and comfortable ward, with a nurse ready and anxious to administer to any want (and I cannot speak too highly of the faithful manner in which the nurses of the hospital discharged their onerous duties), and those appliances at hand by which we can relieve, though we fail to cure, I have just reason to believe that the hospital proved a blessing. In treatment, some general principles regulated our procedure. In every case we endeavoured to make the poor sufferer as comfortable as possible,—and here I may, once for all, remark, in the words of another, "It is notorious, that for this disease the best remedy is an indefatigable and skilful nurse." To the truth of this observation all who have had any experience of cholera will bear testimony. *Warmth*, by various different means, was applied; by the aid of the ordinary hot bottles; by the adaptation of a gas-lamp to the bed, the heated air being conducted through a tube under a cradle, over which the bedclothes were arranged; an apparatus for which we were indebted to the ingenuity of Mr. Smith, of the City Parochial Establishment. We found few patients who were capable of enduring the application of the heated air after this plan for a longer period than twenty minutes. By packing in the hot damp sheet, after the fashion of Dr. William Gairdner, of the efficiency of which, in cases of early collapse, I entertain a high opinion; by the hot bath, which, in early collapse, and particularly if the patient be young, and easily carried, is a most valuable adjuvant to every kind of treatment. By *friction*, we endeavoured to allay the cramps, which in many cases were excessive, and of themselves, in some, endangered the life of the patients. This was done either with the dry hand by an attendant, or with some stimulant or anodyne liniment, of which turpentine and tincture of soap and opium were the chief ingredients. By friction along the course of the spine, diligently performed for nearly an hour at a time, I have seen reaction brought about, warmth and pulse restored, when, too, the application of heat alone had altogether failed. I found no

different. The system of "house to house visitation," which has been fairly tested by Dr. Sutherland and others, appears to me one of the most powerful means we possess of combating the disease. It is a plan which, in the event of another visitation of the disease, should be organised in all large towns. (See Dr. Sutherland's Report, formerly referred to.)

means, however, so sueeessful in eontrolling the violenee of the eramps as one I have now to mention, and for whieh I have to thank a distinguished member of this Soeiety, Dr. Wyse—namely, the applieation of the ordinary *tourniquet*, or *tourniquets*, over the limb or limbs ehiefly affeeted.[1] The relief I have seen afforded from this simple means has been very great. The tourniquets require to be tightly screwed down; and seeing that, as a general rule, the patients are unable to bear their application for more than ten minutes to a quarter of an hour at a time, their removal and re-application is invariably required before suffieient relief is obtained. I ean scareely say too much in favour of this expedient; in several eases where the violence of the eramps in the limbs was so great as to threaten life, I have regarded the employment of the tourniquets as eminently eondueing to the reeovery of the patients. The exhibition of *stimulants* was, in many eases, along with some of the means just mentioned, really all that remained for us to do. I have beeome quite satisfied, that when the exhibition of stimulants is required, and it often is in the more hopeful elass of eases, they should be administered very eautiously, and in small quantities. There is no doubt, that the tendeney to the oeeurrenee of fever after reeovery from eollapse is much inereased by the exhibition of stimulants in large quantities during the stage of eollapse. I eonfess the temptation to give large quantities of brandy, or wine, or ammonia, in one or other form (whieh is in reality safer), is sometimes very strong—irresistible, it would appear; but experienee of such eases has tended to prove, that it is even doubtful if the reeovery from eollapse is seeured by them; while if that does happily oeeur, the tendeney to fever with eerebral

[1] Dr. Wyse, I am aware, is inclined (and from experience) to attribute more decided effects to the employment of the tourniquets than the mere arrestment of cramps. His theory is, that, by the pressure of the tourniquet on the femoral and brachial arteries, the blood is shut off from the extremities; and the circulation being confined to the viscera, reaction is more easily brought about. I can answer for the pressure over the arteries being quite unnecessary for the removal of cramps; all that is required is firm pressure over the body of the limbs. There are very evident objections to Dr. Wyse's theory; but any suggestion in practice from him, more especially when the best effects have been observed to follow, must always command our attentive consideration.

symptoms is undoubtedly increased. What even more than the liberal exhibition of stimulants, during collapse, leads to this untoward result, is the habitual indulgence in spirituous liquors. I have never seen a drunkard recover from cholera without passing through a marked stage of the post-febrile excitement.[1]

There is no doubt that the suppression of urine, and particularly the non-elimination of urea,[2] has to do with the development of this febrile condition, but it is not alone its cause. Several patients in the hospital had passed urine in abundance before it occurred, and continued to secrete it, with a due amount of urea, while the state of fever lasted. Two of these, notwithstanding, died in coma. In such cases we must of necessity look for the retention in the blood of some other poison than urea.[3]

Before quitting the subject of the suppression of urine in cholera, I may mention, that in some cases in the hospital we had every reason to believe that the abstraction of blood from the loins by cupping, or that dry cupping over the same region, did good, and appeared to hurry on the secretion of urine. I scarcely know whether to attribute any good effects to the exhibition of diuretics. We gave such remedies a fair trial in the appropriate stage of the disease; and of all these we were inclined to attach most remedial virtue to the acetate of potash in scruple doses; largely diluted and frequently repeated, it never caused nausea or sickness. In all cases recovering from collapse I have practised and counselled the employment of the catheter;[4] in most cases, a little dirty urine will be thus

[1] It is very common to hear Indian practitioners contrast the disease, as seen in India, with that witnessed in this country; and in no respect do they look upon this contrast as better marked than in the occurrence of the so-called consecutive fever in the cholera of the latter. That the prevalent use, or rather abuse of alcoholic drinks, has much to do with this result, we do not entertain any doubt. Even on the continent of Europe the occurrence of consecutive fever, in cases of cholera, seems to have been much rarer than in Great Britain. On this point see *Cases of Cholera*, collected at Paris, by James Jackson, junior. Boston: 1832.

[2] The chief morbid characters of the urine in cholera are the presence of albumen, and a very great diminution in the proportion of urea.

[3] Probably not an ingredient of the urine at all, but most likely of the bile.

[4] Upon this point Dr. George Burrows writes, "The catheter was some-

removed, while in three or four I have been agreeably astonished to find urine to the amount of six, eight, and even twelve ounces flow through the instrument, the consequent relief to the patient being evidently great—in all such the bladder was firmly contracted on its contents.

Without attempting further subdivision of remedies into classes, I shall merely indicate those from which in our experience in the hospital in Surgeon Square we imagined benefit to accrue. For the arrestment of urgent vomiting no remedy seemed more effectual than the *mustard emetic*. A tablespoonful of mustard carefully mixed in a small pint of warm water was the dose we generally administered—it was occasionally repeated. The immediate effects were distressing enough, but as a general rule, and more particularly when the mustard was retained for a few minutes, the result was most beneficial. All other remedies, even *ice*, a most grateful boon to the patient, have fallen short of the mustard. In less severe vomiting, *ice*, *bismuth*, *naphtha*, *chloric ether*, a few drops of *chloroform*, *calomel*, in scruple doses, and *sinapisms*, have all appeared to do a certain amount of good. Some cases, I need scarcely add, have resisted all these means, and the establishment of severe blisters over the epigastrium as well. One poor man who survived in collapse for nearly three days, had the most urgent vomiting I ever witnessed. He had been fearfully intemperate, and whisky, for which he loudly called, and which in small quantities was allowed him, was the only thing which his rebellious stomach would for more than a few seconds retain. For the control of the *severe diarrhœa* in such cases as those formerly noticed, we were in the habit of prescribing the ordinary *lead and opium pill*, in which I placed very great confidence. *Opium*, too, uncombined, may in such cases be given freely,—in an after stage scarcely so freely, with safety; at least, symptoms of the same class, as stimulants appear to increase, opium appears to cause. The treatment of diarrhœa by *sulphuric acid*, I did not find so successful in hospital practice as I had at one time hoped.

When the stools are characteristic of cholera, the great aim of treatment, while undoubtedly to arrest or diminish the

times introduced, and urine drawn off, although its presence was not suspected."—Dr. Gull's 'Report,' p. 219.

exhaustive drain upon the system, is also to alter the character of those peculiar discharges—indeed, the latter is an element of the former; hence the folly and danger of making the latter the only object, and by purgation with castor-oil, or any other means, hurrying our patients to their end. It is not my desire to uphold any plan of treatment as superior to all others. We are unfortunately so ignorant of any very successful plan as to make such a course alike inexpedient and unprofessional. When, therefore, I name the exhibition of calomel in small doses, sometimes combined with a small quantity of opium, more frequently without,[1] I would not appeal to the successful results of the practice so much as to the clinical observation of the individual cases. It is right, however, that I should state, that in twenty-seven cases of cholera, in all of which collapse to a greater or less extent occurred, there resulted a nearly equal division of recoveries and deaths.[2] In all these the plan of treatment was rigidly adhered to, and only interfered with to the extent of the employment of stimulants in those cases where a fatal termination appeared to threaten. Calomel in scruple, in ten- and in five-grain doses, with greater or less proportion of opium, was exhibited in other cases. Three out of the ten recoveries under the first-mentioned plan were salivated severely; the treatment in these was in force regularly for sixty hours. So far as careful observation of these cases went, fatal as well as recovered, we attributed good effects to the calomel.[3] In the latter, the restoration of bile to the stools

[1] One grain of calomel, with or without one-eighth of a grain of opium, every hour.

[2] Dr. Ayre, who has expressed very great confidence in the efficacy of calomel, given in two-grain doses every five minutes, records 365 deaths out of 725 unequivocal cases treated with calomel.—Dr. Gull's 'Report,' p. 176.

I have a very great objection (founded on observation of the very disagreeable and often lamentable results) to giving medicines too frequently in cholera. True, a great deal may be done *about* a cholera patient—as, for example, by friction—but the exhibition of medicine every five or ten minutes is undoubtedly very exhausting to the patient, at a time, too, when the conservation of all his strength is required.

[3] If the pathological view indicated in regard to the retention of the bile in the gall-bladder and its absence from the bowels be correct (for notwithstanding what has been said as to its existence in very minute quantity in the stools—in most instances it is entirely absent)—then it follows that the employment of calomel in cholera rests not merely on empirical grounds, but

appeared to be uniformly quickened, and before urine in any quantity was secreted, its manifestation appeared critical. In some of the fatal cases the stools had become bilious before death—in two, bloody. We have alluded to the condition of the gall-bladder after death, and more especially to the fact of its being filled with bile—a circumstance which undoubtedly militates to a certain extent against the supposition that the non-elimination of bile has any very important part to play in the pathology of cholera. It is, however, just possible that a hurried secretion of this fluid may take place in the first hours of the disease (or, when cholera supervenes on diarrhœa, an increased secretion of bile having we know occurred); that the gall-bladder being distended, and the passage of bile into the intestines in some manner interfered with, its non-elimination then takes place until the disease is arrested and overcome.[1] However this may be, the presence of bile in the stools is even more than the presence of urine in the bladder (which, too, I have twice in cases of cholera, both rapidly fatal in collapse, found distended with urine evidently pre-secreted but retained) —an indication of a critical beneficial change. In several cases of severe diarrhœa (choleraic diarrhœa), we found benefit from the persesqui-nitrate of iron, in doses of twenty and thirty drops every hour or two hours; the same remedy was useless in genuine cholera. Dr. Cappie has employed the tincture of the muriate of iron in the same circumstances, with, I believe, rather better results. When bile has been restored to the stools, it is well in most cases to keep up the action of the liver and bowels by the substitution for the calomel of some other suitable medicine—the former, if continued, causing salivation, probably an unnecessary evil. Rhubarb, in ten-grain doses, with a double quantity of the bicarbonate of soda or potash, given once, twice, or thrice daily, were those generally used.

Venesection was practised in two cases when the occurrence of head symptoms after recovery from collapse was threatened.[2]

that, from its well-known action on the secerning power of the liver, calomel does fulfil a really important indication.

[1] See on a subject connected with this, a paper by Dr. John Smith, in the 'Edinburgh Medical and Surgical Journal' for 1834.

[2] These were the only two cases in which the lancet was employed; for notwithstanding the strong advocacy for the treatment of cholera by bleeding, the results of the practice, even in the hands of the best informed

One recovered; the other passed into coma, and died. *The saline injection of the veins*—for which, after Dr. Robertson's experience in the hospital I possessed no favour—was performed in three cases by Dr. Asher and Mr. Falconer (according to Dr. Robertson's formula). All the patients died—two within twelve hours after the operation; while the third, in whose case it was practised three times, survived for two days. The *injection of warm water* into the cellular tissue in various parts of the body, repeatedly tried, did no good. *Galvanism*, carefully employed in all the various stages of the disease, appeared more hurtful than useful. The *saline powders of Dr. Stevens*, when retained, which was not often the case, appeared inefficient—a philosophical plan of treatment in theory, I do think, but one from which it is singularly difficult to obtain any satisfactory result in practice.

In regard to the cholera hospital in Surgeon Square, Dr. Sutherland, in his very able and interesting Report to the General Board of Health on the epidemic of 1848–49, has remarked, "that it was by far the best establishment of the kind in any of the districts under my inspection,"—no small meed of praise, when it is remembered that Dr. Sutherland's "inspection" extended to Glasgow, Manchester, Liverpool, Sheffield, and Hull, besides numerous other towns and districts in England and Scotland. It is to me a great gratification to be able to state in this meeting of the profession, that the Sanitary Committee of the Board of Managers of the City Parish, on the late as on the former occasion, most faithfully and efficiently carried out the duties entrusted to them, in providing not only hospital accommodation (in which they were aided by the Managers of the Royal Infirmary), but also every needful appliance and remedial means which ingenuity could suggest or devise.[1] I cannot close without bearing a willing testimony to the faith-

and most observant, has not been such as to recommend it. Mr. Hamilton Bell strongly advises bloodletting, but the successes even of his practice is not encouraging. In the Castlehill hospital at Edinburgh, in 1832—

44 cases in the first stage were bled—7 died.
6 verging on collapse, . all died.
9 in collapse, . . 7 died.

[1] To Mr. Smith, the energetic and benevolent Governor of the City Poor House, all who had to do with the hospital—physician and patient alike—were much indebted.

ful and excellent manner in which all the gentlemen with whose assistance I was favoured performed their arduous and most important labours. I truly feel that much of the relief which the hospital in Surgeon Square afforded to the suffering poor was due to them.[1] I have purposely refrained from noticing the spread of the disease throughout the city generally, chiefly on account of my inability to do that subject justice, and further, because we may reasonably look to the various district medical officers in connection with the different boards for the most accurate and complete information. One thing, however, I feel bound to notice, because my position as hospital physician gave me an excellent opportunity of witnessing these, namely, the excessive labours which the gentlemen to whom I have just alluded underwent. I do believe that the profession generally entertains a very inadequate idea of the duties performed by district medical officers during epidemics of cholera. I have some right to speak of the indefatigable, disinterested and generous manner in which, during several months, the visitation of cholera patients was daily and nightly performed by the gentlemen connected with the City Parish. It is proper that the Society should have an independent testimony to the zeal with which they were always animated, the more so that one of their number,[2] and a member of this Society, in the very midst of his labours, fell a victim to the disease.

[1] These gentlemen were, Dr. Lauder Lindsay, Dr. J. M'C. Cowan, Dr. Asher, Mr. Falconer, Mr. Clarke, and Mr. Wilson.

[2] Dr. John Mackay, in whom, to a most amiable character and an excellent knowledge of his profession, was added an enthusiastic desire to dispense its benefits to the suffering poor, and who by reason of his unwearied labours, there is too much reason to fear, fell an easy prey to cholera.

V.

CASE OF CHRONIC HYDROCEPHALUS

CONNECTED WITH

CANCER AT THE BASE OF BRAIN.

WITH AN ACCOUNT OF THE MORBID APPEARANCES.

By D. RUTHERFORD HALDANE, M.D.,
PATHOLOGIST TO THE ROYAL INFIRMARY.

(*Reprinted from the 'Edinburgh Medical Journal,' February*, 1856.)[1]

The subject of this case, aged (at the time of his death) 11 years, was admitted into the Royal Infirmary, upon the recommendation of my friend Dr. Foulis, on the 26th September, 1855, and died on the 12th of November. The following history, the chief features of which I obtained from the mother of the patient, shortly after his admission into the hospital, but many of the more minute particulars from various sources since his decease, I beg, in connection with the very accurate account of the remarkable appearances found upon dissection by Dr. Haldane, to offer to the Society, in the belief that the record of a case, in many points of view so instructive, is likely to interest its members.

J. N— was born in the Parish of Duddingstone. His father is an agricultural servant, now aged 50, his mother aged 45, both healthy persons, and belonging to families, some of the members of which have attained a remarkable longevity,

[1] Read before the Medico-Chirurgical Society of Edinburgh, December 19th, 1855.

and have apparently been free from any hereditary disease. The original number of the immediate family was *seven,* and of this *five* survive, at the ages of 18, 16, 13, 8 and 5, all ruddy, healthy looking boys and girls. The only other death which has occurred being that of a sister, aged five years —and now seventeen years ago—from convulsive fits, which were supposed to result from a severe blow sustained upon the head some time previously. At the birth of J. N—, two peculiarities were noticed, *one,* it may be presumed, of no interest or importance in connection with the case, a ranula, which, within a few days, was appropriately treated and discussed; *the other* of very different signification and import, namely, the *left* eye being very perceptibly smaller than the right, while the latter was of the ordinary or natural size; besides being smaller it appeared more deeply set in the orbital socket, and very frequent lachrymation gave evidence of its being weaker. In a note, with which I have been favoured by Mr. Hill of Portobello, who carefully watched the progress of the case throughout, he says, "the expression and appearance of the left eye was always different from the right, and in early infancy its total want of vision was obvious." It is probable that want of sight in the left eye was congenital, though the determination of its absence was not settled before the age of three, when Mr. S—, upon whose farm the father of the patient was employed, ascertained that he could not distinguish a watch and certain other objects with which he was familiar, when the right eye was closed. At birth nothing peculiar was noticed in regard to the size of the head; and with the exception of the frontal region being thought broad, nothing abnormal in its conformation. The mother is satisfied that the fontanels were not longer in closing than in the heads of her other children. Between the ages of three and four, and after the blindness of the left eye had been determined, the following remarkable changes, which I shall first notice in the words of Mr. Hill, occurred:— "Both eyes became more prominent, and the left one projected in an extraordinary degree, so as to become at one time completely pushed out of its socket, the eyelids constricting it behind, and giving rise to the most extreme suffering. With some difficulty I was enabled to place it within the eyelids again, and shortly after a large quantity of pus was dis-

charged, which had been collecting behind the eyeball, and the eye gradually assumed the appearance it afterwards retained." The discharge appears, from the testimony of his parents, to have continued during about eight days. About the same time he began to complain of pain, always referred to the back of the head, and a perceptible increase in the size of the cranium occurred. At five years of age he had measles severely, being the only febrile ailment he ever suffered from, with the exception of a very mild attack of scarlatina, about twelve months before his death. The sight of the right eye, which, in his fifth year, had been becoming gradually impaired, was, in his sixth, totally lost. During these years, besides the kind care of Mr. Hill, the little patient was seen by several eminent medical men in Edinburgh, who concurred in believing, that the remarkable appearance presented by the left eye, and the want of vision in both eyes, depended on the existence of a tumour within the cranium. All further concurred in a most gloomy prognosis. In his seventh year, with his head gradually enlarging, and now manifestly abnormally large, he enjoyed good health—his bodily frame developed proportionally more than in his earlier years—he played about, joined heartily in the games of other boys—was seldom noticed to be taciturn—and with the exception of the not unfrequent attacks of severe pain in the back part of the head, had no complaint. These headaches were noticed by his mother to be very sudden in their occurrence—he would join his companions at play, and unexpectedly return to the house, complaining of severe pain always in the same locality, when, after rest for a short period in the horizontal posture, he would rise and again join in play or amusement. At a little more than seven years of age, his health was so good, that, acting under the advice of some kind friends, his parents entered him as a boarder at the "School for Blind Children" in Gayfield Square. Here he continued to reside till very nearly the time when he came under my care in the Infirmary last September. At the Blind School he was frequently seen by Dr. Foulis, who very prudently enjoined upon the teachers the propriety of not forcing him on too speedily in his instructions, and particularly cautioned all with whom he there came in contact, to avoid all possible injury to his then too evidently abnormally enlarged cranium.

Upon making inquiry at the Blind School, the teacher, Mr. Haig, very kindly favoured me with the following particulars regarding the progress J. N— made while there. He entered the institution in September, 1852, when the teachers and servants of the school were much struck by the appearance of his head. He occasionally complained of pain; but during the three years he spent there, his health was as good as that of any of the other children. He took the same amount of exercise. He was rather selfish and stubborn in his disposition. His education was begun in the school, from the alphabet. It very soon became evident that he was a boy of good abilities —decidedly above the average of the boys who have been scholars there. He made rapid progress; and agreeably to the advice of Dr. Foulis, he was kept back, rather than encouraged, as would have been the case with another boy. For reasons which will appear, when Dr. Haldane reads his account of the dissection, I made very special inquiry regarding the integrity of the other senses, as well from Mr. Hill, as from the parents of the boy, and his teacher in the Blind School. All agreed in stating that hearing was perfect; but Mr. Haig felt quite certain that, for some time past his sense of smell had become materially impaired. This was opposed to the belief of Mr. Hill and the boy's parents; but it must be remembered that during the last three years of his life, the teacher in the Blind School had a better opportunity of forming an opinion upon this point than even his parents, from whom, with the exception of a few weeks' holidays, he was absent during the whole of that period. Moreover, the illustration which Mr. Haig gave me of the manner in which he determined the impairment of this sense, is very striking. It has frequently happened, he informed me, that when the children have been taking walking exercise, they have, as the blind are, of course prone to do, placed their feet in dirt, or otherwise come in contact with offensive matter, and, on many occasions, J. N— has done so; while any of the other children who might have done this would have made the discovery for themselves, and remedied it accordingly, this boy never did so; and even after the circumstance was mentioned to him, it was difficult to impress it upon him, owing to the deficiency of smell. Occurrences of this kind, and of a similar nature, led Mr. Haig to regard his

sense of smell as decidedly impaired. In opposition to this view, it is right, however, to mention, that both the boy's parents, within a few months of his death, saw him smelling an apple, at least holding it to his nose, while they heard him speak of its odour being pleasant. The few weeks of vacation, during last autumn, J. N— spent with his parents; during the earlier part of it, they thought him looking well, though quite certain that the size of his head had very materially increased. Both parents had always regarded him as the cleverest child they had, and, on his return from the Blind School on this occasion, they were much gratified to find that his education had been very considerably advanced. He could now read the Bible with its raised character for the blind, while in knowledge of arithmetic and geography he had made very considerable advancement. During the month of August, he played about with his companions, being overjoyed to find his way round about his father's cottage and the farm offices in its vicinity—an occupation in which the blind boy was without a rival. In September, the headaches, from which he had never been entirely exempt, occurred with greater frequency and severity; and being rendered additionally anxious regarding him, on account of a strange drowsiness which frequently overcame him, his parents requested me to admit him into the Infirmary.

The following was his condition at that time. The great enlargement of the head was at once noticed, and the measurements were found to be—*over the vertex, from ear to ear*, 1 *foot* 2 *inches; circumference of head*, 1 *foot* 11½ *inches*. The left eye was very prominent, but had a dull vacant expression, indicating the absence of sight—so also the right which was not prominent. Both pupils were large, but their size did not vary. Pressure over the prominent eye, even to a slight extent, caused much suffering; over the right eye, pressure could be borne. Hearing acute, no complaint of want of smell, nor any evidence of the failure of that sense existed. It was not, however, tested in the way that I now wish it had been done. Face full and somewhat florid. Head plentifully covered with a peculiar woolly-looking, sandy-coloured hair. No imperfection in the osseous development of the cranium could be detected; on the contrary, everywhere the bones felt of the usual hardness

and firmness. Frontal region broad and prominent. Articulation distinct, and voice loud in replying to questions. Body well-covered; fingers and hands smaller than the size and age of the boy would have indicated. Perfect freedom in locomotion. Only complaint that of severe pain in the occipital region. Sleeps well, occasionally moaning. Appetite good. Bowels regular. Dejections and urine healthy. Respiration and circulation free from any evidence of disease. A few days after admission, the hair of head was removed, and a blister applied to the back of the neck, with some relief to the pain; but owing to its return, and on account of a degree of somnolency, accompanied by slowness of the pulse, he was cupped about the middle of September, and another blister applied, while he took small doses of calomel, until salivation was produced. This resulted in a severer form than was intended, and he suffered a good deal from the irritation it produced. Unquestionably, a considerable degree of relief from the headache followed this treatment, and no further measures of importance were adopted, save keeping up, in a very mild degree, the action of the mercury, and the renewed application of blisters to the neck. The remarkable intelligence of the boy was a matter of daily observation in the ward, and he very speedily got reconciled to his hospital life, and became a particular favourite with the other patients. The special sense of touch was in him finely developed, as it generally is in the blind, and he frequently astonished gentlemen in the ward by the readiness with which he distinguished the different sizes of some keys which I carried in my pocket, and gave to him for that purpose.

The action of the bowels was always carefully attended to, and laxative enemata were frequently administered. He had never any sickness or vomiting. Occasionally he complained of giddiness as well as of pain in the head. For a week previous to the fatal event, he had been more than usually cheerful and happy, had expressed a desire to walk about the ward, and one day mentioned that his parents, who believed him to be now greatly better, wished him to return home.

On Sunday, the 11th of November, he was, to all appearance, in the same state as during the previous week. I saw him that day, and had a little conversation with him. In the early

part of Sunday night he was noticed to be restless; but as his nights had formerly been disturbed, less attention was paid to that circumstance than might otherwise have been the case. About five a.m. on Monday, the 12th November, he was seized with a violent convulsive fit, and became quite insensible. During two hours he had a succession of fits, then he became quiet, though never sensible. After a recurrence of another convulsion of great severity, about ten a.m., he expired. He was seen, before death, by my friend and house physician, Dr. Moore.

Before the Society is put in possession of the very remarkable appearances found upon dissection by Dr. Haldane, I would beg, very shortly, to direct attention to the few following points which appear to me of interest in the history of the case:

1st. The evidence of *congenital* disease within the cranium, as marked by the peculiar aspect of the left eye, and by the want of sight in it, which, though not positively determined till the boy was in his third year, in all probability was absent from birth.

2nd. The enlargement of the head, and distension of the cranial bones, was first noticed at the same time as the changes took place in the eyes, *i.e.* between the third and fourth years, and very evidently point to the intimate connection existing between the tumour and the fluid, which thereafter continued to accumulate. "Chronic hydrocephalus," writes Dr. West, "is a morbid condition met with in children at various ages, and coming on under a great variety of circumstances. Sometimes it is congenital, and is then often, though by no means invariably, associated with malformation of the brain. In subsequent childhood, an excess of blood in the brain, or its deficiency, or the existence of some impediment to the circulation through the organ and conditions, all of which have been found to give rise to the effusion of fluid into the cavities of the brain, or upon its surface." Admitting, as it indeed appears necessary to do, with Rokitansky and Vrolik, and with Dr. West, that chronic hydrocephalus is not, in many instances, a mere passive dropsy, but that it may be the result of a slow kind of inflammation of the arachnoid, especially of that lining the ventricles; in the case now detailed, it is, I think, very evident that the effusion into the ventricle arose from the impediment to the venous circulation caused by a tumour, the nature and exact relations

of which will be described by Dr. Haldane. It is rare, says the lamented Dr. Vallcix, that chronic hydrocephalus, coming on a certain time after birth, is not found in connection with an organic lesion, which accounts for the collection of serum. Such are, for the most part, tumours of different kinds, cancerous, tubercular, cystic. Dr. Robert Whytt, a former distinguished professor of medicine in the University of Edinburgh, seems to have been the first physician who directed attention to the possibility of dropsies of the brain being produced by the pressure exerted on the circulation from the presence of tumours. In his 'Observations on the Dropsy in the Brain,' published in 1768, the following passage occurs:—"A scirrhous tumour of the glandula pituitaria, or in any part contiguous to the ventricles of the brain, by compressing the neighbouring trunks of the absorbent veins, will prevent the due absorption of that fluid which the small arteries constantly exhale, and occasion a dropsy in the brain; in like manner, as a scirrhous liver, spleen, or pancreas, are often the cause of an ascites." As a proof of this, we may observe that M. Petit often found the glandula pituitaria scirrhous in those who died of a dropsy in the ventricles of the brain. In one case I met with a hard tumour within the right "thalamus nervorum opticorum."

One of the most frequent causes of chronic hydrocephalus, according to MM. Barthez and Rilliet, is the development of a tumour within the cranium, ordinarily tubercular, but sometimes also cancerous, or of some other nature. Of chronic hydrocephalus so produced, both these authors and M. Legendre have recorded instances.

3rd, and lastly. It is important to note the great intelligence possessed by this boy, the full interest of which will, however, be better appreciated when the details of the *post-mortem* appearances have apprised the Society of the amount of destruction done to the cerebral substance.

Sectio Cadaveris fifty-one hours after death.

External appearances.—No commencement of putrefaction. Head enlarged; forehead prominent. The measurements corresponded to those taken during life. The left eye was prominent, but otherwise appeared natural. The neck was a little fuller than usual.

Head.—When the scalp was removed, the ossification of the

bones of the cranium was found perfect. The anterior fontanelle was quite filled up; there was a marked depression in that situation. The sutures (particularly the coronal and sagittal) were more marked than natural, but there were no ossa triquetra. The skull-cap was very thin, this was particularly the case in regard to the frontal, the anterior part of the parietal, and the squamous portions of the temporal bones. The bone was generally diaphanous, and in places was scarcely more than a line in thickness. The dura mater having been removed, the surface of the brain was found to be drier and paler than natural. The convolutions were much flattened out, and the intervening sulci were very shallow; this appearance was most distinct on the left side. There was an evident difference in the size of the cerebral hemispheres, the left being markedly the larger. Over the left hemisphere fluctuation was distinct, the right felt soft but solid. On slicing the brain, the left lateral ventricle was very soon reached, its upper wall being under half an inch in thickness; when opened into, a golden yellow-coloured serum began to escape. The upper layers of serum were quite clear, the lower were dark and bloody. There was considerable difficulty in removing the fluid from the deeper portions of the ventricle, as the orifice of the pipette became obstructed by what appeared to be a membranous substance. The whole amount of serum in this ventricle was about sixteen ounces. On fully laying open the ventricle, it was found to be very much dilated; its anterior and internal part was occupied by a yellowish, red, soft mass, on the surface of which lay several small, loose, undecolorised clots of blood. This mass, which was partially enclosed in a loose but tolerably strong membrane, appeared to arise from the floor of the ventricle; it was bounded, posteriorly, by the corpus striatum, but extended along the inner margin of this body, and went so far back as to press upon the optic thalamus. As the tumour bulged inwards in the direction of the right hemisphere, the anterior portion of the third ventricle, the septum lucidum, as well as what could be seen of the longitudinal fissure, were pushed over to the right side. The left corpus striatum, and the optic thalamus, though pressed upon by the tumour, were not involved in it. The whole lining membrane of this ventricle was thicker and tougher than natural.

On examining the right lateral ventricle, its anterior cornu was found very small, evidently from the pressure of the tumour; the posterior cornu was dilated, and, along with the middle cornu, contained about two ounces of serum, chiefly clear, but mixed with a little blood in its lower layers. The parts contained in this ventricle were quite natural. The foramen of Monro was about the size of the tip of the little finger, but appeared partially closed by a portion of the investing membrane of the tumour. The choroid plexus, in either ventricle, was natural. The third ventricle was scarcely enlarged.

The brain having been removed, a mass was found to project from the anterior part of the base, chiefly on the left side. This mass was of a yellowish-red colour, and presented a nodulated appearance, some of the nodules being of the size of filberts or small walnuts, but projecting little above the general surface of the tumour. The tumour was accurately bounded, externally and posteriorly, by the fissure of Sylvius of the left side, towards the mesial line it extended as far back as to the corpora albicantia. Anteriorly it reached nearly to the extremity of the anterior lobe. It had not involved the anterior part of the right hemisphere, but had extended towards it, so that the longitudinal fissure was pushed over fully an inch to the right. Farther back, however, the tumour had involved the angular portion of the anterior lobe, situated between the fissure of Sylvius and the longitudinal fissure. The anterior part of the left lateral ventricle had pushed aside the right hemisphere, and so appeared to constitute a part of the base of that division of the brain. Small clots of blood were found along the margin of some parts of the tumour, particularly in the left fissure of the Sylvius. Connected with the posterior edge of the mass, about an inch from the commencement of the left fissure of Sylvius, was a small tumour attached to it by a membranous pedicle. It had the appearance of a cyst growing from the investing membrane of the tumour. It was of the size of a large filbert, was of a reddish-brown colour mottled with yellow, and had a close resemblance to the polished surface of some agates. Several small blood-vessels could be seen to run along its surface.

The mass of the large tumour, as it appeared at the base of

the brain, had a firm, almost gristly feeling, the lobules, however, felt soft, almost fluctuating.

The crus cerebri of the left side appeared longer than the other, and the pons was twisted upon itself, being pulled down on the left side towards the cerebellum.

On examining the base of the brain, the olfactory nerves, the left optic nerve, and the optic commissure, could not be made out, they appeared to have been involved in the tumour. The right optic nerve where it lay upon the crus cerebri was natural.

All the other cranial nerves were uninvolved.

On cutting through the tumour it was found to extend from the base of the brain upwards into the left lateral ventricle. Its lower surface was firm, and of a greyish-pink colour, but the surface which appeared in the ventricle, as well as the nodulated portion, was soft. On gently squeezing the latter portions a milky juice escaped. The cystic tumour connected with its margin contained about two drachms of thin bloody serum. The cerebral matter immediately surrounding the tumour appeared natural. The pituitary gland was flattened out, and appeared a little enlarged, but its structure was healthy.

The dura mater lining the base of the skull, as well as the bones themselves, were healthy. The left orbital plate of the frontal bone was not thicker than card-board.

The left eye was taken out and examined; the opening of the optic nerve into it was very small, the nerve itself was almost entirely atrophied. The cellular tissue behind and around the eyeball was condensed and firm. The structure of the eye, lens, vitreous humour, &c., seemed natural.

The *neck* was not examined, but the thyroid gland was evidently a little larger than natural.

On opening the *thorax* the thymus gland was found to occupy the anterior mediastinum; its inferior extremity rested upon the right auricle of the heart. It consisted of two lateral halves (the left being a little the larger) connected together by loose cellular tissue. It was softish, and presented the normal appearance of the unatrophied gland. Its greatest length was $3\frac{3}{4}$ inches, breadth $1\frac{3}{4}$ inches, its weight was 227 grains. The heart was quite healthy. The lungs were normal; they were not congested; their weight was 15 ounces. The

bronchial glands were natural. The liver, spleen, and kidneys were quite healthy. The supra-renal capsules were no larger than natural. The mesenteric glands were a little enlarged, but contained no abnormal deposit. The intestines were perfectly healthy, the follicular and agminated glands were distinct but not enlarged. The bladder, prostate, and testicles were natural.

Microscopic examination.—On examining a drop of the milky juice squeezed from the tumour, it was found to consist chiefly of round and oval nuclei, either loose or embedded in a very soft transparent substance. These bodies were about $\frac{1}{2000}$th of an inch in diameter, and contained one or two nucleoli and a little granular matter. In addition to these, though much less numerous, were cells of a round or oval form. These were from $\frac{1}{1500}$th to $\frac{1}{1000}$th of an inch in diameter, and each contained a nucleus exactly similar to those floating about. On the addition of dilute acetic acid the cell walls became a little paler and more transparent; no change was produced upon the nuclei. The denser portions of the tumour contained much fibrous tissue, combined with a smaller proportion of the cellular elements. The tumour was found to be abundantly supplied with blood-vessels, arranged in some places in loops and tufts.

On examining the fluid contained in the ventricles only blood-corpuscles could be detected.

On examination of the thymus gland, abundance of the ordinary corpuscles were seen, with a considerable intermixture of fat.

Remarks.—From the external appearances, as well as from the microscopical structure of this tumour, there can be no doubt as to its cancerous nature. It consisted, however, of two portions, one of which was much harder and firmer than the other. It is, I think, very possible that the growth was originally of a non-malignant nature, a circumstance which would account for the slow progress it made during the first years of life. This tumour was pretty accurately circumscribed; it was generally perfectly limited, and though it had involved a portion of the other hemisphere, this was rather due to simple extension than to cancerous infiltration. As was formerly mentioned, it presented no tendency to involve the dura mater

or the cranial bones. It is also worthy of remark that the tumour in the brain was the only local manifestation of the cancerous diathesis. According to Dr. Walshe, the cases in which cancer in the brain is unassociated with the same disease in other organs, are about equal in number to those in which it is so associated. Judging from the history of the case, there can be little doubt but that the disease was congenital; it probably commenced in the internal and posterior part of the anterior lobe of the left hemisphere, consequently in the immediate neighbourhood of the left optic nerve. Hence the blindness which appears to have existed from birth. For a long time the tumour increased very slowly, a circumstance explained by the structure of its lower part being firm, and almost cartilaginous. The right optic nerve did not become affected for a period of at least five years. Previously to this, however, the head had been gradually enlarging. The hydrocephalus, which produced this enlargement, was evidently secondary, and was due either to obstruction to the return of the blood, produced by the pressure of the tumour, or depended upon a gradually increasing amount of fluid, the result of repeated congestions. The complete ossification of the skull proves that the observation of the boy's parents was correct.

The most doubtful point connected with the case is as to the condition of the sense of smell. From the situation of the tumour the left olfactory nerve must, I believe, have been affected from birth, the right, in all probability, not for some years later. Reasoning from the *post-mortem* appearances smell must for some time previous to death have been utterly impossible. And it must be remarked here that the loss of smell might very readily have escaped the attention of the patient's friends; for, granting that the special sense was destroyed, common sensation of the mucous membrane of the nostrils unquestionably remained. The circumstance of the boy taking pleasure in holding an apple to his nose may have been the result of agreeable associations.

Judging from the history the tumour must have begun to enlarge more rapidly within the last few months; this is explained by the soft structure of the recent growth. The immediate cause of death was, I apprehend, hæmorrhage from one or more of the blood-vessels, with which the growth was

abundantly supplied; the appearance of the blood in the ventricle and elsewhere indicated that it had been recently extravasated, while the occurrence of convulsions fixes the exact date, it being well known that, in the case of children, hæmorrhage into the substance, or upon the surface of the brain, far more frequently gives rise to convulsions than to paralysis.

The unimpaired condition of the boy's mind is highly interesting, as illustrative of the great amount of lesion of the deeper portions of the brain, which is compatible with perfect integrity of the intellectual faculties. The mere flattening out of the convolutions appears not to prevent their grey matter from performing its functions.

In the account of the *post-mortem* appearances, I have alluded particularly to the condition of the thymus gland, as it has been noticed that in cases of sub-acute and chronic hydrocephalus, this body does not undergo its normal involution. In this case the thymus was considerably larger than is usual at the age of eleven years, and its fatty transformation had made comparatively little progress.